REPORT OF COMMITTEE

— ON —

Public Water Works and Electric Lighting

— FOR THE —

Town of Merrimac, Mass.

MAY 4, 1903.

MERRIMAC, MASS.,
PRINTED BY THE MERRIMAC BUDGET,
CLIFTON B. HEATH, MANAGER.
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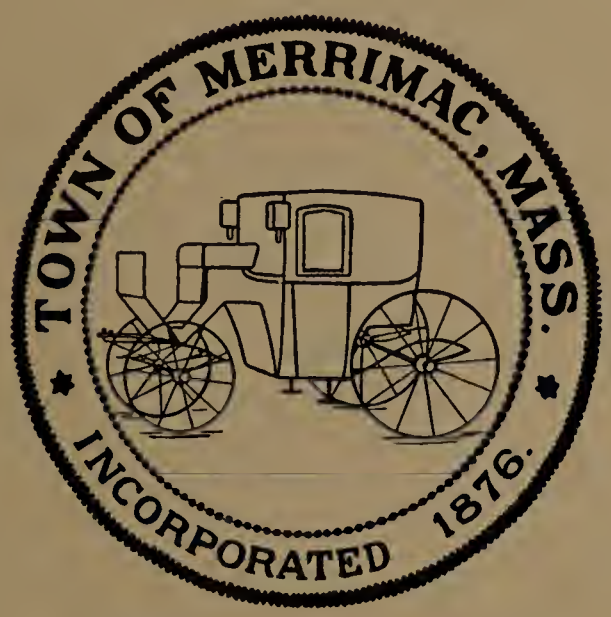

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COMMITTEE'S REPORT.

To the Citizens of the Town of Merrimac:

Pursuant to the following vote passed at the annual meeting of the town, held Monday, March 2, 1903, namely:—"That a committee of three be appointed from the floor to act in conjunction with the selectmen to make investigations as to the probable cost to the town to put in a system of Water Works and Electric Lights; also such other investigations that may be necessary to bring the matter before the town in such shape as to enable them to act upon it at a meeting that may be called by the committee; and that a detailed report be published in the local paper seven days at least before the meeting." The committee appointed at that meeting has made an investigation of the matters therein set forth and respectfully submit the following report:

The committee which was composed of Everett D. George, Ralph H. Sargent, Alfred M. Colby, Selectmen, and Thomas L. Goodwin, Frank E. Pease and Frederick C. Grant, citizens of the town appointed to act with the selectmen in the investigation, met March 5, 1903, and organized by the choice of Everett D. George, chairman of the board of selectmen, as chairman of the committee and Frederick C. Grant as clerk.

Before proceeding in detail the committee desires to state that every endeavor has been made to secure as correct an estimate of the cost of the plant as possible, seeking only to ascertain the truth and place the same before the citizens of the town for their consideration. We make no recommendations as to whether it is or is not for the best interests of the town to install the plants; indeed the committee recognize this is not within their province.

WATER WORKS PLANT.

The committee unanimously decided that they would proceed to investigate this matter on the supposition that water sufficient for the needs of the town, could be found within its limits, either from a system of driven wells or some other source and not undertake the boring of any wells, as they felt that any expense in this direction would be wasted, if, after investigation, the cost of the plant would reach such a figure as to be prohibitive.

Appreciating early the necessity of the assistance of a competent engineer, they first made careful enquiries as to the experience and success of some of those who had supervised work in this section and their choice unanimously fell on Mr. Freeman C. Coffin, Civil Engineer, of Boston, Mass., who was engaged to make a preliminary survey of the town, report on the probabilities of procuring a water supply, and give an estimate of the cost of installing the plant. Mr. Coffin's report is printed in detail with this report and the committee wish to state that they believe it to be a safe and conservative estimate. He has also furnished a map showing streets proposed to be piped and location of hydrants. We also desire to express our entire satisfaction with the work of Mr. Coffin. His plan

provides for a plant which would give as good results as any in the state, considering the size of the town, and one adequate in every particular to its needs, both as to quality of water and fire protection. The material and construction to be of the highest class. Buildings plain but substantial.

The committee wish to point out that the system proposed is practically a complete one. It reaches almost every street in this village and the village at the Port, so that, unless the town should grow materially, it would not need to be extended after its installation. Compared with towns of population of about the same as Merrimac, we are very favorably situated, as our villages are compact and near together, and the number of miles of pipe required is only between eight and nine miles in length, while some towns of about the same population as this, have as many as fifteen miles. Another point in our favor is that wherever the water is taken from it will be within a mile of Merrimac Square.

By referring to Mr. Coffin's report, it will be seen that he has given estimates for three distinct sources of supply. The one near the junction of Winter Street and Nichols Avenue, at foot of Long Hill, being the least expensive. The one providing for taking the water of Kimball's Pond or Lake Attitash and filtering it, the most expensive.

The committee in pursuing their investigations have had the help and advice of the State Board of Health and the Commissionners of several Water Works Systems in towns of about the size of Merrimac, where their supply is obtained from a driven well system, pumped to a standpipe. We have also received from them, in some cases, a complete set of reports, from the preliminary report of the Civil Engineer to the last Report of the Water Commissioners.

This has greatly helped us in getting intelligent and authoritative information on the subject, both as to the benefits to a town of a Water Works System, the cost of maintaining it, and the income to be derived, etc.

In consultation with the State Board of Health, we were informed that it was by all means desirable that towns should own and operate their own Water Works Plant. The objection raised by the citizens is usually the increased rate of taxation; but we find that the tax rate is not greatly increased, even remembering that the town is annually, after the first five years, paying for a plant from the result of this additional tax, and which it will own outright in thirty years from date of operation. Indeed it is well to note, that the town would have to raise and appropriate about $1,800.00 yearly for hydrant service if a private company should be allowed the privilege of installing a plant. Again, as the bonds mature and are paid off, the annual interest to be met is decreasing, while the plant is becoming continually more productive in income, without expenses increasing but little in proportion.

The committee have had impressed upon them the advantage to be derived by a town from a Water Works System, should it see fit to vote to install one and we deem it our duty to briefly refer to them in this report. An authority on these matters writes as follows: "For sanitary reasons a pure water supply is valuable. The great majority of domestic wells furnish impure water, not always dangerous to health, but in many cases so. It is impossible to pour domestic filth into or over the ground in the vicinity of the family well for years, without polluting to a greater or less degree the water collected therein, In many cases the supply of well water is replenished from the family cesspool by the soakage through

the intervening soil of the liquid contents of the latter. Cistern water, unless thoroughly filtered, often contains disease germs, and in dry seasons such a source frequently fails when water is most needed.

"On the ground of convenience, a public water supply is worth all it costs the user; pumps and buckets become unnecessary. The carrying about of water from basement to attic is avoided; and lawns, vegetable gardens and fruit orchards are preserved and kept attractive. Many incipient fires within the house and stable are extinguished by hand hose, and the outside of the dwelling house can be washed an cooled in warm weather.

"The universal protection of combustable property against destruction by fire is insured through the agency of the public fire hydrant. The individual saving in insurance rates, is a practical economy resulting from providing a modern hydrant service.

"Instances showing the folly of relying upon insufficient fire protection are occurring every year, and enough taxable property has been consumed by fire in many cases from the lack of water to meet the annual charges of a system of water works. A few years ago, the business centre of the town of Hopkinton was nearly destroyed by fire, because of lack of water to extinguish the first outbreak of the flames. Recently the town of Uxbridge, with a population but little larger than that of Billerica, suffered the loss of many of its business buildings in the main village by a fire which destroyed property valued at more than enough to pay the cost of a new system of water works.

"The loss of taxable property frequently means an increase of taxation, as the running expenses of the town must be apportioned upon the remaining valuation.

"All these considerations directly affect each tax payer and property owner; but there is a general advantage following the introduction of water, measurable in the growth of the town and the increase in value of real estate and general trade which is shared by every citizen. With few exceptions, the towns which have introduced public water supplies, have taken upon a new growth. Manufacturing capital has sought such places, and the populations have increased. With such accessions, the volume of trade has enlarged, the market for farm products has improved, and new and better business blocks and dwellings have been built."

From the records of the State Board of Health, we find that the following towns in Massachusetts, having by the census of 1900 a population of less than 4,000, own and operate their own water supply: —

TOWN.	POPULATION.
Avon	1,741
Ayer	2,446
Belmont	3,929
Billerica	2,775
Brookfield	3,062
Dalton	3,014
Falmouth	3,500
Foxborough	3,266
Hatfield	1,500
Hinsdale	1,486
Holbrook	2,229
Hopkinton	2,623
Huntington	1,475
Kingston	1,955
Lancaster	2,478
Leicester	3,416
Lexington	3,831
Lincoln	1,127
Longmeadow	811
Manchester	2,522
Maynard	3,142
Middleton	839
Millis	1,053

Monson	3,402
Nahant	1,152
Northborough	2,164
Randolph	3,993
Rutland	1,334
Sharon	2,060
Uxbridge	3,599
Walpole	3,572
Wayland	2,303

It may be noted here, that almost every one of the towns show a material increase in population since the system was installed.

Towns in this state, larger than Merrimac, without a complete system of water supply, population according to census of 1900: —

TOWN.	POPULATION.
Blackstone	5,721
Barnstable	4,364
Chelmsford	3,984
Pepperell	3,701
Tewksbury	3,683
Dartmouth	3,669
Dudley	3.553
Templeton	3,489
Sutton	3,328
Hardwick	3,203
Medfield	2,926
Westfield	2,890
Medway	2,761
Wrentham	2,720
Oxford	2,677
Westford	2,624
Holden	2,464
Groveland	2,376
Hardwick	2,334
Dennis	2,333
West Boylston	2,314
Belchertown	2,292
Somerset	2,241
Hanover	2,152

Of the above, seven are considering the matter, some having bills in the Legislature at this session, which will enable the towns to take action. Three of the above are partly supplied by having fire protection from a system in connection with river water; and one is partly supplied by a private company.

In regard to the town of Pepperell, mentioned above, it may be well to remark that at the time of our visit to the State Board of Health, we were informed that the town had been considering the matter of a water works system for some three or four years, but that they had failed to pass a vote in its favor. Within two weeks from the date of our visit to the State Board of Health, a large part of the business portion of the town of Pepperell was burned down, with a loss between 50,000 and $75,000, and it is said that the factories will not be rebuilt, as the firms contemplate locating where conditions are more favorable.

Your committee have carefully read the report of a previous committee appointed by the town on water supply, and have found the information therein contained very valuable, and of great assistance to them in this investigation. Mr. Freeman C. Coffin also mentions this fact in his report. It has enabled him to confine the possible field for a water supply to a comparatively small area, and should the town see fit to proceed with the boring of wells with the view of determining the source of supply, only two places now need receive any attention; that at the foot of Long Hill, near the junction of Winter Street and Nichols Avenue, and that near the southern end of Kimball's Pond or Lake Attitash, near the plains, so called.

As will be seen from the report of Mr. Coffin, he has provided for a larger boiler and boiler house than would be necessary for the water system alone, which adds to the cost of the plant somewhat.

Your committee realized that in order that the town could, if it chose take any

action in regard to installing a Water Works Plant, it would be necessary to get permission from the Legislature. Accordingly a petition for a town legislative Act has been presented to the Legislature, signed by this committee, and has been passed and approved. A copy of the Act accompanies this report.

This Act can be accepted only by a two-thirds vote of the voters present and voting at a special meeting to be called for the purpose, and merely permits the town to establish a water supply under its provisions if it so wishes. There is nothing obligatory about it. The Act provides for the issuing of town bonds to an amount not exceeding $90,000 in order to provide for the cost of installing the plant. This amount will, we believe, be more than enough to pay for the total cost of the works. No more bonds would be issued than is necessary to pay for the cost of the construction.

From enquiries made in Boston of some prominent bankers, we learn that with normal money market conditions, the Town of Merrimac can readily float a 3 1–2 per cent. bond and receive a premium on them. This premium could be set aside and be used, as far as it might go, to pay off the first installment of bonds maturing.

For the information of the citizens, we give below a table of rates for water supply for dwelling houses, hotels and boarding houses, as usually charged: —

DWELLING HOUSES.	PER YEAR.
Occupied by one family, for the first faucet	$6 00
For each additional faucet, to be used by the same family	2 00
If occupied by more than one family, one faucet being used by all, for each family	5 00
If occupied by more than one family, each family having one faucet, for each family	6 00
For the first bath tub	4 00
If used by more than one family in the same house, each family	3 00
For each additional bath tub	2 00
For the first water closet	4 00
If used by more than one family in the same house, each family	4 00
For each additional water closet,	2 00

In no case shall the charge for the use of water by a private family exclusive of hose and stable, unless metered, be more than $20.

When two faucets are used, one for hot and one for cold water, emptying into the same basin, only one charge will be made for both.

HOTEL AND BOARDING HOUSES PER YEAR.	
For first faucet	$10 00
For each additional faucet	3 00
For first bath tub	8 00
For each additional bath tub	3 00
For first water closet	8 00
For each additional water closet,	3 00

In some towns the rates are a little higher than those given above, especially where the water works is under control of a company.

There are at this time thirty-seven towns in this state having a water supply whose population is 2,500 or under.

ELECTRIC LIGHT PLANT.

Your committee have consulted with Mr. H. A. Sawyer of Amesbury in regard to the cost of installing an Electric Light Plant suitable to the present needs of the town. He is a gentleman known in this vicinity as an expert in this line of business, and one upon whose judgment we feel we are safe in relying.

He has very kindly submitted a plan for lighting and an estimate of the cost of installing the plant for your consideration.

He has based his estimates on the following line of apparatus: One 100 K. W. 2300 Volt, 60 Cycle, 3 Phase, revolving field alternator complete with switchboard. Also 15 series enclosed arc lamps with reflectors, absolute cut out for arc lamps, and high tension street brackets for incandescent lamps, arc lamps supported from 12 feet mast arms, fitted with Cutter lamps supporting pulleys. One 50 light Constant current transformer, with two circuit winding and switchboard. Poles in streets to be of chestnut, 35 feet in length on part of Main Street, School Street and Church Street: 30 feet poles elsewhere. All to be fitted with two pin cross arms and cross arm braces, poles to be shaved and painted. His plan provides for 15 arc and 100 incandescent lamps of 25 candle power.

The locations of arc lamps to be:

CIRCUIT NO. 1.

1. Main above Forest Street.
2. Locust and Main Streets.
3. Main above Church Street.
4. Main and Church Streets.
5. Main at H. M. & A. office.
6. Main and Prospect Hill Streets.
7. Liberty Street, B. & M. Depot.
8. Church Street.
9. Church Street.
10. Church and Maple Streets.

CIRCUIT NO. 2.

1. Merrimac and Water Streets.
2. School, High and Broad Streets.
3. School and Mill Streets.
4. School and Middle Streets.
5. School near Square.

The location of incandescent lamps to be 8 lamps on Main Street, West of light No. 1, on Circuit No. 1., last light to be 2,100 feet from Square (shown on plan).

8 lamps on Amesbury end of Main Street, replacing two arc lamps as shown on plan.

Woodland and adjacent streets, 8 lamps.

Grove and adjacent streets, 12 lamps.

Church and Nichols Streets 8 lamps.

From Square to Port via Broad Street, 12 lamps.

At Merrimacport, 24 lamps replacing 6 arc lamps, as shown on plan.

Pleasant, Green and Locust Streets, 20 lamps.

To install the above-mentioned apparatus complete, including setting up of alternator (but not foundations), switchboards, and wiring of all kinds, including lightning arresters at station, hanging of lamps on streets, and wiring and putting up of street fixtures for incandescent lamps:

For lines, lamps, and wiring, including all labor of installation	$3,920 20
Alternator	2,000 00
C. C. Transformer	750 00
150 horse power compound condensing engine	2,000 00
Setting and piping engine to boiler	600 00
Foundations	300 00
Total	$9,570 20

This plant will do the lighting of the the town and furnish current for 1,000 lamps of 16 candle power for stores and residences or for motors.

If arrangements can be made with the Street Railway Company, and N. E. Telephone & Telegraph Company, and Postal Cable Company for use of poles on Main, School, and Church Streets, and others, a saving of $1,000 to $1,200 can be effected.

Mr. Sawyer advises us that the average income per incandescent lamp per month is over fifty cents, or about $6 per year.

On this basis the plant would be capable of earning $6,000 annually, after allowing for power to light the streets.

Chapter 34 of the Revised Statutes specifies under what conditions towns may acquire and operate an Electric Light and Power Plant.

SUMMARY.

From the estimates of Mr. Coffin and Mr. Sawyer we obtain the following figures showing the total estimated cost of a Water Works System and Electric Light and Power Plant:

Estimate No. 1.

Cost of Water Works System with supply near junction of Winter Street and Nichols Ave., per Mr. Coffin's report (estimate No. 1),	$79,112.37
Cost of Electric Light Plant,	9,570.20
	$88,682.57
If poles of H., M. & A. St. Ry. Co. and New England Tel. and Tel. Co. can be used, deduct	1,000.00
Total cost,	$87,682.57

Estimate No. 2.

Cost of Water Works System with supply on "Plains" per Mr. Coffin's report (estimate No. 2),	$79,592.07
If necessary to supplement from Kimball's Pond, add	3,000.00
	$82,592.07
Cost of Electric Light Plant,	9,570.20
	$92,162.27
If poles of H., M. & A. St. Ry., etc. are used, deduct	1,000.00
Total cost,	$91,162.27

Estimate No. 3.

Cost of Water Works System with supply from Kimball's Pond by filtration, per Mr. Coffin's report (estimate No. 3),	$84,658.95
Cost of Electric Light Plant,	9,570.20
	$94,229.15
If poles of H., M. & A. St. Ry. Co., etc. are used, deduct	1,000.00
Total cost,	$93,229.15

Land damages are not included in the above estimates.

We have estimated, from the experiences of other towns and according to our best judgement, what the expense of running the plant would be for the first five years and the additional amount required to be raised by taxation. We have made no allowance for income from the plants during this period. Whatever is received from water rates, domestic lighting and motor power will reduce the amount as given below, as required to be raised, by the amount of the total income from these sources.

Allowing that the bonds issued amount to $95,000 as the cost of both plants, which you will notice is higher than the largest estimate, the amount to be raised for

Interest at 3 1-2 per cent is	$3,325.00
Help, (estimated)	1,500.00
Coal, "	800.00
Incidentals, "	200.00
Total,	$5,825.00
Deduct cost of street lighting under present system,	700.00
Net amount to be raised,	$5,125.00

To raise this amount the tax rate would have to be increased about $4 per $1,000 on the present valuation.

From this estimate we find that the town would require to raise $5,125 provided no income was received from the plants during the first

five years. At the end of the sixth year we estimate that the income and expenses would be about as follows:

Interest,	$3,325.00	
Help,	2,000.00	
Coal,	950.00	
Incidentals,	300.00	
		$6,575.00
*Payment of first maturing bonds,		3,800.00
		$10,375.00
Deduct:		
Estimated income from water rates,	$2,500.00	
Estimated income from domestic lighting,	1,500.00	
Estimated income from motor power,	1,500.00	
Cost of present system of street lighting,	700.00	
		$6,200.00
		$4,175.00

* This amount paid annually for 25 years will provide for the payment of the whole issue of $95,000.

According to this estimate the additional amount to be raised to maintain the plants and pay the installments of bonds as they become due at the end of the sixth year would be $4,175. We believe that should the town install these plants that the expenses provided for above would be ample for all needs and that a larger income than we have estimated for might be reasonably expected.

After the sixth year the running expenses should not increase materially while the plants should continue to be more productive in income to the town. Interest to be met on the bonds annually will also be decreasing and help put the plants on a more favorable basis from the town's standpoint.

In conclusion it may be well to note that Mr. Louis E. Hawes, Civil Engineer, of Boston, in his report to the town, January 28, 1897,

in regard to water supply for Merrimac, states that it is reasonable to expect an annual income from private water takers of about $3,630.

EVERETT D. GEORGE,
RALPH H. SARGENT,
ALFRED M. COLBY,
THOMAS L. GOODWIN,
FRANK E. PEASE,
FREDERICK C. GRANT.
} Selectmen of Merrimac.

Merrimac, Mass., May 4, 1903.

ENGINEER'S REPORT.

To the Committee on Water Supply,
Merrimac, Mass.

Mr. F. C. Grant, Secretary,

Dear Sir :—In accordance with your instructions, I submit the following brief report upon a water supply for the town of Merrimac with estimates of cost. The source of supply has not yet been determined upon, but this report and these estimates are made, by your direction, upon the assumption that a supply can be obtained, which fact, however, will have to be determined by later investigations.

Estimates have been made for systems with three different sources of water supply. They are as follows: first, a supply from a driven well system located in the valley near the junction of Winter Street and Nichols Avenue. There is above this location a water shed of considerable area, apparently about three-fourths of a square mile, which will, judging by the topography of the ground, be sufficient to furnish an abundant supply, if the material in the valley where the wells are proposed is of a suitable nature and of sufficient extent to store and yield the water to a system of driven wells. No test well has been driven at this point and, therefore, nothing is known of the conditions below the surface.

The second location is at what is known as the "Plains." One well has been driven here which indicates the possibility of drawing water from the ground. The apparent water shed at this point is, however, rather limited, and unless wells constructed here are able to draw a part of their supply from Kimball's Pond, it would seem doubtful if a sufficient supply for the future could be obtained here, without supplementing it by pumping water from Kimball's Pond upon the surface, and depending upon natural filtration through the ground to the wells.

The third source is Kimball's Pond. In my opinion it will be necessary to filter the water from this source to make it entirely suitable for a domestic supply.

There is, however no doubt that an ample and satisfactory supply can be obtained from this source by means of sand filtration.

Distribution System.

The distribution system will be substantially the same with either of these different supplies. It will consist of a stand pipe upon Titcomb Hill, which will be 30 feet in diameter, and, with its top, 180 feet above the ground at the Town Hall; a 12in. cast iron pipe line from this stand pipe to the town, with a 10-in. pumping main from the pumping station to the town, and 6-in. and 8-in. distribution pipes.

Pumping Plant.

The pumping plant proposed in either case will consist of one one million gallon, compound, condensing pumping engine; one one million gallon Underwriters' fire pump, with heater, condenser, and air and feed pump, and other necessary appliances; two 66-in. boilers; a plain, substantial, brick building, and steel smoke stack.

The boiler room is designed with space for a third boiler if required in the future. These boilers are much larger than is necessary for the pumping plant alone, and are intended to furnish steam for an electric lighting plant as well, an engine and dynamo room for which can be built in connection with the station if desired

The driven well systems in the case of the first and second plans and the filter plant in the case of the third are designed with sufficient capacity to furnish water by direct pumping in case of fire. The stand pipe also gives ample pressure for fire service. The mains are designed of sufficient size to give sufficient fire protection for any fires liable to occur in a town of this size and character.

The estimates are based upon present market prices, but include nothing for land or water damages. The estimate of the amount of rock to be found in the excavations for the pipe lines is perhaps as accurate as can be made without expensive borings.

It should be understood that no opinion is expressed or implied by this report in regard to the probability of a supply being obtained at the first and second sources other than that already given. Other locations for water supply were examined and considered, but were not thought to give sufficient promise to warrant any estimates based upon them. In the consideration of these other sources the examinations and investigations made, and the test wells driven in 1897, were of much assistance in determining the probability of securing a supply at such points.

Respectfully submitted,

FREEMAN C. COFFIN.

Following are the estimates of cost:

No. 1 is for a system with a supply from driven wells in the valley near the junction of Winter Street and Nichols Avenue.

No. 2 is for a system with a supply from driven wells at the "Plains."

No. 3 is the cost of a system with a supply of filtered water from Kimball's Pond.

ESTIMATE NO. 1.

Cost of System with Supply near Junction of Winter Street and Nichols Avenue.

879 tons Cast Iron Pipe at $32.00	$28,128 00
Laying 32,328 feet 6-inch Pipe at .25	8,082 00
Laying 8,120 feet 8-inch Pipe at .28	2,273 60
Laying 1,630 feet 10-inch Pipe at .31	505 30
Laying 4,060 feet 12-inch Pipe at .34	1,380 40
1,000 cubic yards Rock Excavation at $4.00	4,000 00
52 6-inch Water Gates at $11.00	572 00
1 8-inch Water Gate at 17.75	17 75
3 10-inch Water Gates at 26.50	79 50
3 12-inch Water Gates at 32.50	97 50
59 Gate Boxes at $5.00	295 00
Special Castings	800 00
60 Hydrants at $33.00	1,980 00
Boilers	3,200 00
Pumping Machinery	4,625 00
Pumping Station complete	5,000 00
Stand Pipe complete	4,600 00
Driven Well System complete	5,000 00
	$70,636 05
Add 12 per cent. for Engineering and Contingencies	8,476 32
	$79,112 37

ESTIMATE NO. 2.

Cost of Sytem with Supply on the "Plains."

893 tons Cast Iron Pipe at $32.00	$28,576 00
Laying 32,328 feet 6-inch Pipe at .25	8,082 00
Laying 4,540 feet 8-inch Pipe at .28	1,271 20
Laying 4,800 feet 10-inch Pipe at .31	1,488 00
Laying 4,060 feet 12-inch Pipe at .34	1,380 40
1,000 cubic yards Rock Excavation at $4.00	4,000 00
52 6-inch Water Gates at $11.00	572 00
1 8-inch Water Gate at 17.75	17 75
3 10-inch Water Gates at 26.50	79 50
3 12-inch Water Gates at 32.50	97 50
59 Gate Boxes at $5.00	295 00
Special Castings	800 00
60 Hydrants, set $33.00	1,980 00
Boilers	3,200 00
Pumping Machinery	4,625 00
Pumping Station complete with stack	5,000 00
45 x 30 Stand Pipe complete (235,000 gallons)	4,600 00
Driven Well System	5,000 00
	$71,064 35
Add 12 per cent. for Engineering and Contingencies	8,527 72
	$79,592 07
If it becomes necessary to supplement this source by pumping from Kimball's Pond, with natural filtration through the ground, add	3,000 00
Making a Total of	$82,592 07

ESTIMATE NO. 3.

A System with Supply from Kimball's Pond by Filtration.

929 tons Cast Iron Pipe at $32.00		$29,728 00
Laying 32,328 feet 6-inch Pipe at .25		8,082 00
Laying 4,540 feet 8-inch Pipe at .28		1,271 20
Laying 6,000 feet 10-inch Pipe at .31		1,860 00
Laying 4,060 feet 12-inch Pipe at .34		1,380 40
1,000 cubic yards Rock Excavation at $4.00		4,000 00
52 6-inch Water Gates at $11.00		572 00
1 8-inch Water Gate at 17.75		17 75
3 10-inch Water Gates at 26.50		79 50
3 12-inch Water Gates at 32.50		97 50
59 Gate Boxes at $5.00		295 00
Special Castings		800 00
60 Hydrants at $33.00		1,980 00
Boilers		3,200 00
Pumping Machinery		4,625 00
Pumping Station complete		5,000 00
Stand Pipe complete		4,600 00
Filtration Plant complete		8,000 00
	$75,588 35	
Add 12 per cent. for Engineering and Contingencies	9,070 60	
	$84,658 95	

LEGISLATIVE ACT.

COMMONWEALTH OF MASSACHUSETTS.

Chapter 281, of the Acts of 1903.

AN ACT to authorize the Town of Merrimac to supply itself and its Inhabitants with Water.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. The town of Merrimac may supply itself and its inhabitants with water for the extinguishment of fires and for domestic, manufacturing and other purposes; may establish fountains and hydrants and relocate or discontinue the same; and may regulate the use of such water and fix and collect rates to be paid therefor.

SECTION 2. Said town for the purposes aforesaid, may take by purchase or otherwise and hold the waters of any streams, ponds, or springs, wholly within the limits of said town, and the water rights connected therewith within said limits, and may take from Attitash lake, sometimes called Kimball's pond, situated partly in said town and partly in the town of Amesbury, so much of the waters thereof as it may desire, and may also obtain and take water by means of bored, driven, artesian or other wells on any land within said town of Merrimac: provided, that no source of water supply shall be taken for domestic purposes without first obtaining the advice and approval of the state board of health. Said town of Merrimac may hold and convey said water through said town and may take and hold, by purchase or otherwise, all lands, rights of way and easements, within said town of Merrimac, necessary for holding, storing, purifying and preserving such water and for conveying the same to any part of said town; and may erect on the lands thus taken, purchased or held, proper dams, reservoirs, buildings, fixtures and other structures, and may make excavations, procure and operate machinery, and provide such other means and appliances as may be necessary for the establishment and maintenance of complete and effective water works; and may construct and lay conduits, pipes and other works, under or over any lands, water courses, railroads, railways or public or private ways, and along any such ways, in such manner as not unnecessarily to obstruct the same; and for the purpose of constructing, maintaining and repairing such conduits, pipes and other works, and for all proper purposes of this act, said town of Merrimac may dig up any such lands and may enter upon and dig up any such ways in such manner as to cause the least hindrance to public travel thereon. The title to all land taken or purchased under the provisions of this act shall vest in said town of Merrimac, and the land so taken may be managed, improved and controll-

ed by the board of water commissioners hereinafter provided for, in such manner as they shall deem for the best interests of said town. Said town shall not enter upon, construct or lay any conduits, pipes or other works within the location of any railroad corporation, except at such time and in such manner as it may agree upon with such corporation, or, in case of failure so to agree, as may be approved by the board of railroad commissioners.

SECTION 3. Said town shall, within ninety days after the taking of any land, rights of way, water rights, water sources or easements as aforsaid, otherwise than by purchase, file and cause to be recorded in the registry of deeds for the southern district of the county of Essex a description thereof sufficiently accurate for identification, with a statement of the purpose for which the same were taken, signed by the water commissioners hereinafter provided for.

SECTION 4. Said town shall pay all damages to property sustained by any person or corporation by the taking of any land, right of way, water, water source, water right or easement, or by any other thing done by said town under authority of this act. Any person or corporation sustaining damages as aforesaid under this act, who fails to agree with said town as to the amount of damages sustained, may have the damages assessed and determined in the manner provided by law when land is taken for the laying out of highways, on application at any time within the period of two years from the taking of such land or other property, or the doing of other injury under authority of this act; but no such application shall be made after the expiration of said two years, except that no application for the assessment of damages shall be made for the taking of any water or water right, or for any injury thereto, until the water is actually withdrawn or diverted by said town under the authority of this act.

SECTION 5. In every case of a petition to the superior court for an assessment of damages, the said town may tender to the petitioner or his attorney any sum, or may bring the same into court to be paid to the petitioner for the damages by him sustained or claimed in his petition, or may, in writing, offer to be defaulted, and that damages may be awarded against it for the sum therin expressed; and if the petitioner does not accept such sum, with his costs up to that time, but proceeds in his suit, and does not recover greater damages than were so offered or tendered, not including interest on the sum recovered as damages from the date of such offer or tender, the town shall have judgment for its costs after said date, for which execution shall issue; and the petitioner, if he recovers damages, shall be allowed his costs only to the date of such offer or tender.

SECTION 6. Said town may, for the purpose of paying the necessary expenses and liabilities incurred under the provisions of this act, issue from time to time bonds, notes or scrip to an amount not exceeding ninety thousand dollars. Such bonds, notes or scrip shall bear on their face the words, Town of Merrimac Water Loan, and shall be payable at the expiration of periods not exceeding thirty years from the date of issue, shall bear interest payable semi-annually, at a rate not exceeding four per cent per annum, and shall be signed by the treasurer of the town and countersigned by the water commissioners hereinafter provided for. Said town may sell such securities at public or private sale, or pledge the same for money borrowed for the purpose of this act, and upon such terms and conditions as it may deem proper: provided, that such securities shall not be sold for

less than the par value thereof.

SECTION 7. Said town shall at the time of authorizing said loan provide for the payment thereof in such annual proportionate payments, beginning five years after the first issue of such bonds, notes or scrip, as will extinguish the same within the time prescribed by this act; and, when such vote has been passed, the amount required thereby shall, without further vote, be assessed by the assessors of said town in each year thereafter until the debt incurred by said loan shall be extinguished, in the same manner as other taxes are assessed under the provisions of section thirtyseven of chapter twelve of the Revised Laws.

SECTION 8. Said town shall raise annually by taxation a sum which with the income derived from water rates will be sufficient to pay the annual expenses of operating its water works and the interest as it accrues on the bonds, notes and scrip, issued as aforesaid by said town, and to make such payments on the principal as may be required under the provisions of this act.

SECTION 9. Said town may contract with any person or corporation, and may purchase any interest in any property which may be deemed necessary to carry out the provisions of this act, and may hold such interest and property.

SECTION 10. Whoever uses any water taken under this act without the consent of said town, or wilfully or wantonly corrupts, pollutes or diverts any waters taken or held by said town under this act, or destroys or injures any structure, work or other property owned, held or used by said town under the authority and for the purposes of this act, shall forfeit and pay to said town three times the amout of damages assessed therefor, to be recovered in an action of tort; and upon the conviction of any of the said wilful or wanton acts shall be punished by a fine not exceeding three hundred dollars or by imprisonment for a term not exceeding one year.

SECTION 11. The occupant of any tenement shall be liable for the payment of the rent for the use of water in such tenement, and the owner of such tenement shall also be liable in case of nonpayment by the occupant for all sums due for the use of water under this act, to be recovered in an action of contract in the name of the town of Merrimac.

SECTION 12. Said town shall after the acceptance of this act, at a legal meeting called for the purpose, elect by ballot three persons to hold office, one until the expiration of three years, one until the expiration of two years, and one until the expiration of one year from the next succeeding annual town meeting, to constitute a board of water commissioners; and at every annual town meeting thereafter one such commissioner shall be elected by ballot for a term of three years. All the authority granted to the town by this act and not otherwise specially provided for shall be vested in said board of water commissioners, who shall be subject however to such instructions, rules and regulations as said town may impose by its vote. A majority of said commissioners shall constitute a quorum for the transaction of business. Any vacancy occurring in said board for any cause may be filed for the unexpired term by said town at any legal meeting held for the purpose. Any such vacancy may be filled temporarily by a majorith vote of the selectmen, and the person so appointed shall hold office until the town fills the vacancy in the usual msnner.

SECTION 13. Nothing in this act shall be construed to prevent the town of Amesbury or the city of Newburyport from supplying itself with water from said Attitash lake or Kimball's pond for the extinguishment of fires and for dom-

estic and other purposes.

SECTION 14. This act shall take full effect upon its acceptance by two thirds of the legal voters of the town of Merrimac present and voting thereon at a legal meeting called for the purpose within three years from its passage; but the number of meetings so called in any one year shall not exceed three; and for the purpose of being submitted to the voters aforesaid this act shall take effect upon its passage.